

HARD LOAM OVER SODIC RED CLAY

General Description: *Hard loamy surface soil abruptly overlying a coarsely structured red clay subsoil with soft carbonate at depth*

Landform: Lower slopes and outwash fans

Substrate: Red clay mantled by soft carbonates

Vegetation:



Type Site: Site No.: CU063

1:50,000 sheet:	6630-4 (Spalding)	Hundred:	Andrews
Annual rainfall:	425 mm	Sampling date:	13/05/96
Landform:	Lower slope of low rise, 1% slope		
Surface:	Hard setting with no stones		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Hard reddish brown light clay loam with weak platy structure. Clear to:
10-25	Very hard red (bleached when dry) massive clay loam. Abrupt to:
25-45	Hard dark reddish brown medium heavy clay with strong very coarse prismatic structure (breaking to coarse angular blocky). Gradual to:
45-65	Hard dark reddish brown medium heavy clay with strong very coarse prismatic structure (as above). Gradual to:
65-90	Red medium clay with strong polyhedral structure and minor soft and nodular carbonate. Gradual to:
90-140	Red slightly calcareous medium clay with strong polyhedral structure and minor soft and nodular carbonate.



Classification: Calcic, Subnatric, Red Sodosol; medium, non-gravelly, clay loamy / clayey, deep

Summary of Properties

Drainage	Moderately well drained. Water will "perch" on top of the clay for a week or so at a time following prolonged rain.
Fertility	Natural fertility is moderately high as indicated by the exchangeable cation data. The nutrient status of the surface soil is affected by organic matter levels which are moderately low at this site. Phosphorus and potassium levels are adequate.
pH	Neutral at the surface, alkaline with depth.
Rooting depth	90 cm in pit but few roots below 65 cm.
Barriers to root growth	
Physical:	The massive structure of the surface horizons, coarse structure of the subsoil and the overall soil strength restrict the capacity of roots to fully exploit the soil volume.
Chemical:	Boron is low, salt is low although moderate with depth, sodicity is moderate from 45 cm, and pH is high at depth, but less than the critical 9.2 value.
Water holding capacity	Approximately 90 mm in root zone, although some of this is effectively unavailable due to poor root distribution patterns.
Seedling emergence:	Fair, due to the hard setting and sealing characteristics of the surface.
Workability:	Fair. The poor surface structure limits the moisture range over which effective working is possible.
Erosion Potential	
Water:	Moderately low (provided run-on water is controlled).
Wind:	Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	7.3	6.4	0	0.15	1.83	1.32	45	537	8.4	1.3	1.64	25	53.3	4.96	10.7	4.37	1.69	0.30	1.00	2.8
0-10	7.1	6.3	0	0.15	1.84	1.02	17	450	9.7	1.0	-	-	-	-	9.9	6.09	2.96	0.48	1.10	4.8
10-25	7.5	6.3	0	0.04	0.27	0.53	10	279	3.2	0.8	-	-	-	-	9.0	3.74	2.21	0.71	0.51	7.9
25-45	7.6	6.1	1	0.06	0.43	0.55	8	343	4.8	2.0	-	-	-	-	19.8	6.29	5.40	2.77	1.03	14
45-65	8.4	6.9	1	0.14	0.98	0.40	5	436	14	4.7	-	-	-	-	27.1	7.71	7.68	4.67	1.34	17
65-90	8.8	7.5	2	0.38	2.32	0.23	4	489	59	5.9	-	-	-	-	26.6	8.59	9.39	6.89	1.67	26
90-145	9.0	7.9	2	0.52	3.59	0.21	3	468	132	5.7	-	-	-	-	23.8	6.90	7.81	6.14	1.43	26

Note: Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.

CEC (cation exchange capacity) is a measure of the soil's capacity to store and release major nutrient elements.

ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the CEC.